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EDITORIALS

Peace on Earth

IN THE decade just passed there have been many Christmas days when the message of Christmas seemed a hollow mockery. That we are experiencing another such Christmas season so soon again, seems an even greater contradiction to the message of the Christ Child spoken by the Angels to the Shepherds on that joyous night nineteen and a half centuries ago—"Glory to God in the highest; and on earth peace to men of good will." In those days the world knew little of the meaning of peace or good will. Until Christ came down to preach His doctrine of love, there was little honor among men. Today there are millions and millions of men who know that doctrine. But many have forgotten; or in their haste to earn money and thus attain "importance" or "position" have forgotten or overlooked that doctrine.

"Peace to men of good will". Without good will there can be no peace. Without "Glory to God in the highest", there can be no good will. It takes time to give Glory to God—yes even more than the half hour or forty-five minutes grudgingly allowed each Sunday morning. It takes a redirection of our hearts and minds; a redefinition of objectives; a change in the course of our lives. Peace cannot be bought, nor can it be wrested from the enemy in battle. It cannot be foisted on the world or a nation by decree; it cannot be harnessed by legislation. Peace is not, according to Christian Doctrine, a direct antithesis of war. It is not an attribute of nations. Peace is fundamentally and intrinsically the property of man because it stems from good will. The will is a basic, God-given faculty of man.

So it's the individual, the individual only, who can bring peace to the world. If it is a man's will to seek peace—peace of mind and soul and thus eventually peace of arms, that can surely be attained through prayer. If he prefers the doubtful security of material wealth and power, then he is doomed forever to disappointment.

These poor words, reaching but a few paltry thousand souls, can have but little effect on the world, and especially the forces of anti-Christ, which appear so powerful today. But if by chance they do suggest to our readers and friends a reexamination of the values of life, then we will have, as we wish each and every one of you, "joy" and "peace" on Christmas Day.

GLASS PACKAGE DESIGN

HEINZ ADDS DILL PICKLES

As an adidtion to one of its oldest and most famous food lines, pickles, H. J. Heinz Company this season placed in national distribution Processed Dill Pickles, packed in 25-ounce jars for the retail trade.

The family-size container was developed by the Heinz Company in recognition of the fact that dill pickles, always a steady mover in the grocery store, can also be kept successfully in the home icebox or pantry shelf as an accessible condiment or snack.

To assist the self-merchandising appeal of the package, the label features cartoon characters as a marked departure from other labels carried by the company's products. While the Heinz keystone and the familiar "57" figure have both been retained as customer identification features, accompanying cartoons also point out two popular uses of the pickles. In one cartoon, a youngster has just pulled a pickle from the bottle for an after-school snack, and in the second, the "head of the house" looks forward to eating a man-sized sandwich whose flavor has been picked up by the addition of a slice or two of dill pickle.

Although Heinz has sold processed dills in bulk and in No. 10 tins for years, the 25-ounce jar made its first appearance to the retail trade in glass containers this year.

GLASS CONTAINERS

(OCTOBER 1950)

Shipments of 9,212,000 gross of glass containers in October 1950 were 13 percent below September shipments of 10,617,000 gross but were 16 percent above shipments of 7,945,000 gross in October 1949, according to the Bureau of the Census, Department of Commerce. Production of glass containers in October 1950 totaled 10,612,000 up 22 percent over the previous month.

For individual types of containers, the most significant changes in shipments from September to October were a decrease of 39 percent for narrow-neck food containers; a drop of 18 percent for narrow-neck medicinal and health supplies containers; and an increase of 10 percent for returnable beverage bottles.

The statistics in the release are based on reports from 30 companies manufacturing glass containers and represent complete coverage of the glass containers industry.

STUDENTS TOLD OF VITAL ROLE OF GLASS

Packages have played a vital role in the development of the American system of mass production and distribution of food products, and among the various packages which have helped to perfect this system glass containers have played an especially significant part, Charles E. Deger, Central Regional Merchandising Manager, Owens-Illinois Glass Company, said in a talk delivered at Michigan State University, East Lansing, Michigan, on November 30.

Mr. Deger spoke before an audience of 175 students and faculty members from the University's Department of Food Distribution and from the School of Business and Public Service. Michigan State's Department of Food Distribution is unique in that it provides the only college curriculum in the country which specializes in the training of students for positions in the field of mass marketing and retailing of food products. Dr. Kenneth Wilson is director of the department.

Heinz Add Dill Pickles in Glass

To illustrate the importance of glass containers in the American way of life, Mr. Deger pointed out that the 150 million people in the United States use the contents of approximately 80 billion glass containers.

Leadership in the glass container industry today involves more than the manufacturing process, the speaker said. Progress in the industry demands pioneering, and this means breaking precedents as well as working out new ideas in actual practice. He cited the research facilities of his own company which maintains a large staff of specialists constantly engaged in research and development.

One group of research specialists is constantly at work seeking to improve the functional design and ultimate serviceability of glass containers, Mr. Deger pointed out. Another division concentrates on machinery design and plant layout for better handling of glass containers in customer's plants, while other specialists conduct bacteriological, microorganism and pilot plant laboratory tests to provide an invaluable source of information on glass-pack processing.

In addition to these research specialists the Market Development Department has specialists in advertising, publicity, consumer and market research and merchandising, all working to develop markets and acceptance for glass containers.

To illustrate principal phases of the glass container industry Mr. Deger showed three motion pictures produced by Owens-Illinois. The first picture, "It's In the Bottle," depicts the actual process of manufacturing glass containers in a modern glass factory. "Glassing In Duraglas" shows 12 different food products being packed in glass containers. The third film, "American Stores Milestone," brings these glass-packed foods into the retail food markets.

GLASSED APPLE SAUCE

A definite move toward customer "eye appeal" was made recently by Knouse Foods, Peach Glen, Pennsylvania, with the introduction of Lucky Leaf apple sauce packed in attractive large and small size glass containers.

Available in both 17 ounce and eight ounce jars, apple sauce in the new containers is being distributed through the 84 Lucky Leaf brokers in all major markets represented by the company's coast-to-coast sales organization.

Though apple sauce was among the earliest products packed and merchandised by Knouse Foods, this marks the first time that glass containers have been used by the company for this product.

Owens-Illinois manufactures the jars; White Cap produces the closures. Ernst Spuehler, Chicago, designed the labels supplied by Stecher-Traung.

In Glass for First Time

OHIO CANNERS MEET

Open meeting with television—Talk wholesaler relations—Taxes—Washington outlook—Research and food standards—Scheid succeeds Spain to presidency.

Last but not least, the 43rd Annual Convention of the Ohio Canners Association, held at Columbus, December 12 and 13, wound up the State and Regional Fall Convention season. The meeting marked the first time in 31 years that the association membership was called to a meeting by a secretary other than Roy Irons. Paul Hinkle, the man who stepped into the office in July, turned in a capable first performance, and demonstrated an organizational "know how" and enthusiasm that should prove invaluable to the membership.

Falling under the head of "Welcome Surprises", the attendance of both Roy Irons and Ex-president Jim Smith provided an extra touch of Auld Lang Syne. It's hard to tell whether the new title "Assistant to the President" had anything to do with it, but Roy seemed vastly improved in health and promises he'll see us in Chicago in February. Jim, who is President of the Esmeralda Canning Company, came down with a stroke about a year ago and he, too, though travelling at a somewhat slower pace, is back on the job. Jim's misfortune serves to emphasize the spirit of fraternity that exists amongst Ohio canners. Shortly after his attack and prior to last season's pack, his brother Phil, who is associated with him in the operation of the cannery, suffered the same kind of a stroke. Norm Spain, President of the Association, feeling that he had enough corn left for another season in his Winchester Canning Company warehouse, took over for the Smith brothers at Circleville. Norm is still available to lighten the burden when necessary but will put his own plant in operation come another season.

Before leaving the topic of "Welcome Surprises", we would be amiss not to mention that Luther Swaim was handing out the cigars. Mrs. Swaim, who said "I do" to Luther about a year ago, presented him with a baby daughter three weeks prior to the Convention. The happy couple was on hand to receive the congratulations of friends.

PICKAWAY COUNTY REPORTS

Ohio claims a first in opening their annual meeting over television channels. As canners, their hosts and guests sat down to luncheon on Tuesday afternoon, they were somewhat surprised to see and hear the familiar faces and voices of Norman Spain, Carlos Campbell, Paul Hinkle, Jim Smith and others on the screens of two television sets strategically placed in the ballroom.

The Esmeralda Canning Company, together with four other Pickaway County merchants, sponsors a half hour weekly program over Channel 6, Station WTVN of Columbus. The other merchants were persuaded to make Tuesday's broadcast a canning special, thus making it possible to produce this novel effect.

Before a greatly enlarged audience then, N.C.A. Secretary Campbell stressed the importance of the Canning Industry to the nation, and its place in the defense program. President Norman Spain and Secretary Paul Hinkle outlined the contributions of canning to the State of Ohio, and pointed to the high quality of Ohio canned foods. Meinhardt Crites of Crites Milling Company, and Sheldon Mader of Winorr Canning Company, other Pickaway County canners, joined Mr. Smith in extolling the merits and contributions of Pickaway County Canned Foods—8 plants with an annual pack of nearly a half million cases of canned foods — contracting for nearly 6,000 acres, paying Pickaway County farmers $233,167.07 and Pickaway County labor $338,000.

THE PROGRAM

President Spain called attention to Mr. Irons' retirement, presented him with a scroll expressing the appreciation of members, and introduced the new Secretary, Paul Hinkle. Referring to the uncertain times ahead, Mr. Spain suggested that every member read and reread the article "Planning and Selling for Profit" by Major Douglas G. Colley, that appeared in THE CANNING TRADE of October 16. He introduced the Rev. Harvey C. Hahn, after dinner speaker, who was well received.

WHOLESALER RELATIONS — Mr. Forest Powers, Secretary of Ohio Wholesale Food Distributors, passed along the suggestions of his members for better canner-wholesaler relations—1. More realistic label allowance; 2. More care in labeling to avoid loose and cockeyed labels; 3. More liberal swell allowance and show on invoice so that it will not be overlooked; 4. Show case weights on invoice (Cal-Pak does); 5. More care in loading cars to avoid dents, etc.; 6. Make more personal calls.

TAXES — INFLATION — Mr. C. Emory Glander, State Tax Commissioner, traced the trend and cause of inflation. He pointed out that in 1929 taxes had taken 13 percent of the National Income, in 1949, 26 percent, and estimated that in the next two or three years the take would amount to 33⅓ percent. The only way to control inflation, he said, is to increase output per man—overtime work without overtime pay, and to reduce unnecessary Federal, State and local spending at once. Senator Byrd has the formula, he says.

WASHINGTON PICTURE — N.C.A. Secretary Carlos Campbell had the difficult and almost impossible task of describing the Washington picture. He stressed the fact that we are weak in some raw materials and warned that further rationing of these, including tin, must be expected. He told his audience that canned foods are as important to the soldier as guns and tanks, and therefore, the industry producing them must receive preferential treatment in any consideration of tin allocation. He said that the tin saving electrolytic process was used on 60 percent of the volume in 1950 compared to 3 percent in 1942.

Speaking of can sizes, he said that one thousand tons of tin could be saved if all the food now packed in 8 ounce were packed in 2's, but that more material savings could be made by reducing coatings. On the subject of controls, Mr. Campbell said there is just no sense in voluntary controls.

VEGETABLE PROCESSING RESEARCH

Dr. William A. Gould, Horticulture Department, Ohio State University, reported on the research conducted at the University in vegetable processing. With the help of slides he described the "Texturemeter" (developed at Ohio State), which has permitted a study of the relationships of maturity and fibre content of green beans to the texture of the beans. Experiments with this machine indicate that with readings much over 290 one can expect to find the fibre content above the Food and Drug tolerance of 0.15 percent.

General conclusions of an insecticide project that has been going on for three years are that all the benzene hexachloride formulations tested imparted an off flavor to lima beans and tomatoes. DDT and Rotenone imparted an off flavor to carrots.

In a variety evaluation test for corn that has been in progress for four years, Dr. Gould and his associates came up

with some interesting data. In testing for percent of cut off and the quantity packed per acre and per ton for instance, they found that some of the higher yielding varieties had low cut offs or were very tough at the mature stage of maturity. Based on yields, percent cut off and the quality studies, they ruled "Tendermost" and "Victory Golden" as the best varieties of those studied.

In searching for the best method of processing tomato juice for the retention of the quality—color, consistency, defects and flavor, the Ohio researchers found that the cold break gives a lower extraction with a corresponding lower yield, but a higher quality score and grade. The comparison of methods of processing show that a slightly superior color is obtained with the cold break method; at least enough to score the product into the grade A range for color, and that the product has less defects and a decidedly better flavor. However, there appears to be little difference between the type of cooking, at least when using a cold break. Thus the question resolves itself around the factors of quality versus quantity. The hot break, low temperature cook yielded 51 cases of 46 ounce compared to 40.5 cases for the cold break, pre-heat and low temperature cook, and 42 cases for the cold break, flash, fill, seal and cool method.

CHANGES IN FOOD STANDARDS

Dr. Maurice Siegel of the firm of Strasburger & Siegel, Baltimore, discussed the new Standards of Identity and Quality for Corn and proposed a change in the Standard of Identity for Canned Tomatoes. Dr. Siegel expressed the conviction that the corn standards were extremely liberal and urged and warned canners not to pack down to the minimum levels therein prescribed, for even though such packs are not subject to seizure, they must always meet competition. He placed particular emphasis on the quality determination by the alcohol insoluble solids test, stating that canned corn with an AIS of 27 percent is not fit to eat. The amount of silk, too, 7 inches per ounce in whole kernel, and 5 inches per ounce in cream style of silk over one-half inch in length, he said, is also a far too liberal allowance.

Turning to the Standards of Identity for Canned Tomatoes, Dr. Siegel called for a reopening of the standards to permit the addition of liquid drained from mature tomatoes to canned tomatoes without a label declaration. He said that since it is next to impossible to pack whole fancy tomatoes without this addition, and buyers have expressed a dislike for the statement, there is a temptation to try to evade the Law. He showed that there is no deception nor adulteration involved and stated that there is no laboratory test to prove that this has been done.

The tomato section of the Association passed a resolution recommending that Section (a) 3 of Paragraph 53.40 of the Standards be stricken out.

COMMITTEE REPORTS

Following Dr. Siegel's address, reports were heard from the following Committee Chairman:

Auditing — Chester D. Swaim, C. W. Swaim Canning Company, Wilmington

Resolutions—William T. Creamer, New Vienna Packing Company, New Vienna

Agriculture—Newman C. Buckles, Quality Food Products, Bradford

Finance—French Jenkins, LaChoy Food Products, Archbold

Federal Grading—George Wenger, Lake Erie Canning Company, Sandusky

Legislative — Walter Scheid, Campbell Soup Company, Napoleon

Workmen's Compensation — Richard C. Sharp, Sharp Canning Company, Rockford

Research & Marketing — Russell Kline, Stokely Foods, Inc., Celina

Waste Disposal—Arthur Gassman, Stokely Foods, Inc., Norwalk

Labor — Walter Scheid, Campbell Soup Company, Napoleon

Nominating—Richard C. Sharp, Sharp Canning Company, Rockford

ELECTION OF OFFICERS

Walter Scheid of the Campbell Soup Company of Napoleon, Ohio, was unanimously elected to succeed Norman Spain of the Winchester Canning Company, Canal Winchester, as president. Other officers and directors elected were: French Jenkins, LaChoy Food Products, Archbold, First Vice-President; Thomas Timmer, Tip-Top Canning Company, Tipp City, Second Vice-President; Paul Hinkle, Celina, Secretary-Treasurer.

New Directors are: Norman Spain, Winchester Canning Company, Canal Winchester; Karl Hirzel, Hirzel Canning Company, Toledo; Charles Stemley, Stemley Canning Company, New Weston; Leroy Wenger, Lake Erie Canning Company, Sandusky.

Directors held over are: Richard Boucher, Bryan Canning Company, Bryan; Paul Korn, St. Marys Packing Company, Delphis; C. Luther Swaim, C. W. Swaim Canning Company, Wilmington.

CANNING FIRM FORMED

With authorized capital stock of $100,000, Southern Canning & Preserving Corporation has been organized at Charlotte, N. C., by John Carabeteas, Bessie Carabeteas, and H. L. Strickland, all of Charlotte.

CLARA VAL BUILDINGS AND EQUIPMENT SOLD

The cannery buildings and equipment of the Clara Val Co., Morgan Hill, California, have been sold at public auction to Vincent Traina, Jack Genovis, Manuel Parise, Dominic Gagliardi and Chauncey Biachini.

PRESERVE, MARASCHINO CHERRY AND GLACE FRUIT SECTION OF CANNERS LEAGUE MEETS

The annual meeting of the Preserve, Maraschino Cherry and Glace Fruit Section of the Canners League of California was held at the Fairmont Hotel, San Francisco, December 15th. Hans Leuenberger, of Treasure Island Food Products, Oakland, retired as chairman after two years of service, and Adolph Asti, of S & W Fine Foods, Inc., San Francisco and Redwood City, was elected to the office. L. T. Latillade, of Tea Garden Products Co., San Francisco, was re-elected vice chairman, and Sylvia Kempton was returned as secretary.

In the evening there was a cocktail party, followed by a dinner, for members and guests, with the Garden Room well filled. It was the first time that a president of the Canners League of California had attended one of the Christmas get-togethers of the Section and Dale G. Hollenbeck, president of the League, made a short talk and complimented members of the affiliated organization on their enthusiasm and spirit of good fellowship. M. A. Clevenger, executive vice-president of the League, made a short talk on his recent trip to Washington. R. J. March, who is treasurer of both organizations, was introduced, as was Miss Sylvia Kempton, secretary for both League and affiliating Section.

Christmas gifts were in order for officials with Mr. Hollenbeck getting a couple of large ears, with cotton to close them when the going gets rough; Miss Kempton drawing a package of Tums, since she attends so many banquets; "Mac" Clevenger getting a pack of cards as he goes to Washington so often, the city of many "deals", and a member of the Quartermaster Department, getting some rubber money, so he could make funds stretch further.

The professional orchestra was dismissed early and member talent took over with piano solos, piano duets, piano and 'cello duets and community singing. Retiring chairman Hans Leuenberger, surprised most members with compositions of Chopin played with the technique of a concert artist.

WELCH PRESENTS HOWDY DOODY SHOW

Welch Grape Juice Company has purchased the 5:30-5:45 P.M. EST segment of the Friday "Howdy Doody Show" which comes over 44 NBC Television stations, effective at once. Welch's frozen concentrated grape juice and bottled grape juice will be featured on the show at present, with the possibility that other Welch products will be introduced from time to time.

NEWS AND PERSONALS

MR. AND MRS. SHOOK 60th WEDDING ANNIVERSARY

Mr. and Mrs. Frank M. Shook of Easton, Maryland, will celebrate their 60th Wedding Anniversary on Christmas day, December 25. Mr. Shook, who retires as Treasurer of the Tri-State Packers Association on January 1, and who was honored at the Association's meeting in Atlantic City this month, suffered a paralytic stroke early in November, and his many friends throughout the industry will be glad to know that he is improving daily.

FMC ESTABLISHES INDIANAPOLIS OFFICE

Sprague-Sells Division of the Food Machinery & Chemical Corporation has established a new sales office in Indianapolis, which will be in charge of James L. Frasier, who has transferred from the home office in Hoopeston to the new location at 2005 Northwestern Avenue, Indianapolis 8, Indiana; phone, Highland 9661.

Mr. Frasier has been with FMC for 14 years and has served the packers in Ohio, Indiana and Kentucky as sales representative for the past three years. The new office will bring him closer to the center of his territory in order to allow more time and closer contact with his customers.

HUDSON TO MANAGE CAN PLANT

J. J. Hudson, with Sherwin-Williams, the world's largest paint company since 1931, has been appointed superintendent of the firm's new $500,000 tin can plant at Hubbard, Ohio. The new Hubbard plant produces cans in gallon, quart and pint sizes.

NAMES SEABROOK VICE-PRESIDENT

John M. Seabrook, youngest of three sons of C. F. Seabrook, President of the Seabrook Farms Company, Bridgeton, New Jersey, and who has been a Director of the company and Vice-President in Charge of Farming Operations for the past ten years, has been named Executive Vice-President of the company.

A graduate of Princeton University in 1939 with highest honors in chemical engineering, Mr. Seabrook has directed the agricultural activities of his company, the nation's largest vegetable farm-freezing plant. He is presently serving his second term on New Jersey's Migrant Labor Board, having been initially appointed by Governor Edge, and reappointed by Governor Driscoll.

1950 LIMA BEAN PACK

The National Canners Association's Division of Statistics reports the pack of canned fresh lima beans in 1950 to total 3,591,173 actual cases as compared with 4,713,207 actual cases packed in 1949. On the basis of 24/2's the 1950 pack amounts to 3,229,000 cases, which compares with 4,371,000 cases packed last year.

Broken down by sizes the 1950 pack was composed of 341,261 cases 24/2's, 256,699 cases 48/8Z, 63,808 cases 48/1P, 2,517,150 cases 24/303's, 389,417 cases 6/10's, and 22,838 cases of miscellaneous sizes of tin and glass.

The report is a summary of all canners known to have packed lima beans in 1950 with estimates for only one firm not reporting.

CORRECTION

In our issue of December 11, page 9, in reporting the recent Tri-State Convention, this publication indicated that Secretary Calvin Skinner, made a plea for higher dues basis. Mr. Skinner advises that his plea was to non-members to join at the present rate. He also pointed out that his comment was that the cost was three-quarters of a cent for ten dozen—not one dozen as reported. We sincerely regret the error.

CMSA DINNER-DANCE

The Dinner-Dance Committee of the Canning Machinery & Supplies Association has announced that this annual convention event is scheduled to take place in the Palmer House Ballroom, February 20, 1951. The spacious ballroom of the Palmer House will accommodate 750 instead of the previous maximum of 625 to 650 in other locations. Tables will will seat ten and tickets are available at $10.00 each. Reservation orders accompanied by check, should be sent to Sam G. Gorsline, Secretary of the Canning Machinery & Supplies Association, Lock Box 430, Battle Creek, Michigan.

BROKERS BANQUET TICKETS

Members of the National Food Brokers Association have been urged to be on the lookout for order blanks for the 1951 NFBA Convention Banquet, which will be held in Chicago on Monday night, February 19. The orders will be included in an early issue of the Association's "News Letter". No orders will be accepted unless they are submitted on the official order blank. As usual the banquet is expected to be one of the highlights of the Convention.

TIN USE CURBED

In a move to stretch and conserve the nations supply of tin, the National Production Authority on December 10, amended order M-8 which calls for a 20 percent reduction in the use of the strategic metal for civilian use beginning February 1. The order also sets forth limitations on inventories of pig tin as well as alloys and other materials containing tin and explains the conditions under which reports are required in conection with the production, distribution, importation, uses and inventories of pig tin. The intent of the order is that other materials which are not in short supply will be substituted for tin wherever possible.

Just how the order will affect tin cans is not known at this writing. Until and unless further pressure is imposed, it is expected that the following steps will be taken to reduce the amount of tin used by the industry. 1. Reduction of coatings; 2. Reduction of cans for certain items on a percentage basis; 3. Reduction of can sizes.

It is also not known at this time whether or not canned foods for the Armed Forces are to be considered for defense purposes. It should be remembered that the purpose of the order is to conserve a strategic material, the supply of which could be cut off at any moment.

JOINS GREEN GIANT BOARD

Edward B. Cosgrove, president of the Green Giant Company, canners, announces the election of John P. Houck, prominent New York City food broker, to the board of directors of the canning company.

CURTICE BUYS PLANT

Curtice Bros. Co., with headquarters at Rochester, New York, has completed negotiations for the purchase of the Fuller Canneries Co.'s plant at South Dayton, New York. Curtice will move a part of its tomato operations, including the manufacture of its Blue Label catsup, to South Dayton. The Fuller plant, which is equipped for canning peas and green and wax beans, is one of the largest canning plants in New York State, and will provide Curtice with greatly increased production.

S & R CHANGES NAME

The mayonnaise and salad dressing manufacturers at Streator, Illinois, formerly known as S & R Fine Foods, Inc., has changed the name to J. L. Read Foods, Inc. and will operate under the same ownership and management as heretofore. J. L. Read heads the company as President.

The Control of Fruit & Vegetable Diseases

A survey of the severity of fruit and vegetable diseases in the United States and the chemicals recommended for their control

By GEORGE L. McNEW, S. E. A. McCALLAN and P. R. MILLER

III The Chemicals used on Stone Fruits

(No. 3 in a Series of 12 Articles[1])

There are as many diseases of the stone fruits as of apples and its relatives. The usual array of blights, mildews, rusts, rots and scab attack plum, peach, cherry, apricot and related fruits. Brown rot is the dominating disease on this group of fruit crops; so all spray programs are designed to control this disease just as every apple spray program revolves around scab. The other diseases call for some modification in the brown rot schedule but usually a properly applied program for brown rot will take care of most of the other diseases.

PEACH DISEASES

Brown rot. About 17 per cent of all the sulfur used for controlling plant diseases (166,000,000 lbs. annually in the United States) is applied on peaches, primarily to control this disease. Although brown rot is known as a fruit disease, it may inflict severe damage to the branches and leaves where it causes cankers and shot-hole effects.

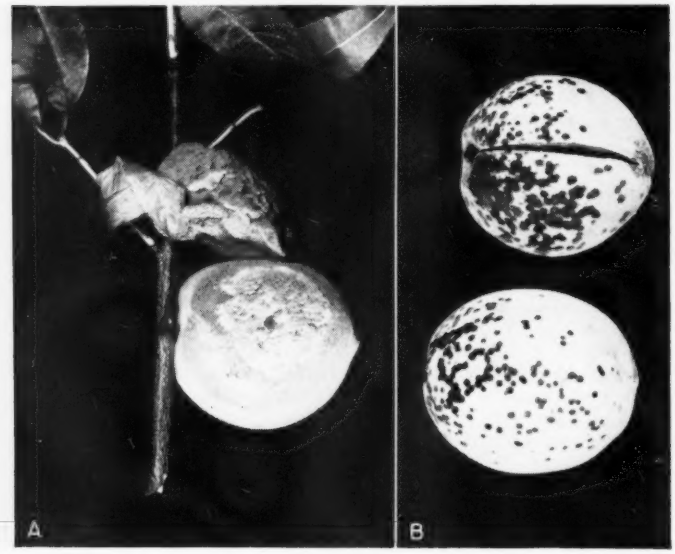

Figure 12 A. Brown rot of peach showing the typical brown rot of fruit and fruiting bodies of the fungus in the center of the spot. There are several million fungus spores in the buff brown mass which are readily spread to other fruit on the tree during packing operations and in transit. Before control measures were perfected this disease often destroyed much of the Georgia crop. B. Peach scab lesions showing typical dark brown superficial lesions. The fungus that causes this disease is entirely different from the one which causes apple scab. (Photographs supplied through the courtesy of Plant Pathology Section, North Carolina State College).

On the fruit it causes a light brown, rapidly expanding spot. The disease is particularly severe on fruit that is tree ripened or which is ripening in transit to market. Many a farmer has received word from his broker that a carload of peaches was completely destroyed when it arrived at the destination even though there was scarcely a trace of rot when the car was loaded.

Within three or four days the infected spot becomes covered with buff brown spore masses (Figure 12 A). These spore masses dust off readily and the fungus threads that bear the spores quickly replace them with a new crop so nearby fruit is constantly exposed to a shower of spores. These germinate if there is the least amount of moisture available and infect the fruit particularly if there are wounds or abrasions such as those caused by bruising or breaking of epidermal hairs when the fuzz is removed from the fruit. Once the germ tube from a spore penetrates the epidermis, it produces enzymes that dissolve the cell walls and releases sugars for its nourishment. The result is a rather firm rot. The infected fruit eventually dries down to form a dark brown mummy that may adhere to the branch (Figure 16).

The fungus, which has been given names such as *Sclerotinia americana, S. fructicola, S. cinerea* and *Monilinia fructicola,* overwinters primarily in these mummified fruit. It may go through a sexual stage during the winter and produce a very small cup-like structure that bears many spores in small sacs. These cups are borne on small stalks which vary in length depending upon how deeply the mummy was covered by refuse. The spores usually are ready for discharge about the time the blossoms open and may cause severe blossom blight which appears as a light browning of the petals and essential organs. Sometimes the mummies which are not covered up by soil and refuse merely resume growth and start producing a new crop of summer spores that infect blossoms and leaves.

The damage from this disease fluctuates widely. The average annual loss in the United States exceeds $5,000,000. Georgia has experienced losses of over 40 per cent in some seasons and there were records of the entire crop being destroyed in some localities before control measures were developed. The annual loss for the United States has ranged between 11.5 and 1.4 per cent of the peach crop over the period 1920 to 1939 (Figure 13). The average loss has been estimated at 4.7 per cent in spite of the best control measures now in use.

The sulfur sprays are accepted as the standard material for control in nearly every state (Table 14). However, the copper compounds, dichloronaphthoquinone and dithiocarbamates, are finding favor in several states. These materials are applied in a schedule of four to six sprays. The most common program consists of applications at petal fall, first cover (shuck fall), second cover (2 weeks later), third cover (pre-ripening), and fourth cover (pre-harvest). In some localities a pre-blossom spray is used and the number of cover sprays is modified according to seasonal development of the disease.

[1] This series of articles will be reprinted later in pamphlet form for handy reference and may be obtained from the Publication Office of Boyce Thompson Institute, Yonkers 3, N. Y., at a price of one dollar each.

Peach scab is entirely different from apple scab. The fungus overwinters in small cankers about one-eighth of an inch in size on twigs which support a crop of summer spores early in the spring. These spread to the young fruit where they cause many olive green, usually superficial spots that darken with age until they become deep brown. Severely infected fruit may be misshapen and develop cracks (Figure 12 B). The disease is widespread in all localities but the Pacific Northwest (Table 15). It is ordinarily considered much less severe than brown rot and is readily controlled by the brown-rot spray program. Sulfur is exceptionally effective but the newer organic fungicides may also be used.

Peach leaf curl is caused by a fungus that has a somewhat unusual life cycle. It overwinters as a saprophytic yeast-like growth on the bark and in the crevices of the branches. These summer type of spores are exposed so they may be readily destroyed by spraying with any one of several chemicals (Table 16) during the dormant period. Lime sulfur has been used extensively but wettable sulfur, copper or organic fungicides are used in many localities.

TABLE 15. THE SEVERITY OF SCAB OF PEACHES (Caused by *Cladosporium carpophilum*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] 1000 bu.	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c]
Arkansas	2,040	O			S1, S2
Connecticut	130		X		S1, S2, S3, D2, O8, O9
Delaware	406	0-5 (2)			S1, S2
Florida	87				
Georgia	5,033		X		S1, S2, D2, D3, C2
Illinois	1,367		Tr-25 (Tr)		S1, S2, D3, N2, Q2, S3, D2
Indiana	334		X		S1, S2
Iowa		1-10 (4)			D2, S1, S2, S3, Q2
Kansas	62		X		S1, S2, S3
Kentucky	653		X		
Louisiana	298	20-50 (25)			S1, S2, S3
Maine			2		S2
Maryland	505	1.8			S2, S1, S3
Michigan	2,998	2,000 bu.			S1, S2
Mississippi	875		X		S2
Missouri	575		5-50		S1, S2
Nebraska		Variable			S1, C3, D2, Q2, S2
New Hampshire	15	1-5			S1, S2
New Mexico	150				
New York	1,332		X		S1, S2
North Carolina	1,971	X			S3
Ohio	836	10-100			S1, S2, D3, D2, Q2
Oregon	505				
Pennsylvania	1,809	1-4.5 (3.5)			S2, D3, Q2, S3, S1
South Carolina	2,695	2			S1, S2, D2, D3
Tennessee	1,036				
Texas	1,628	15-40			S3, S2, D3
Virginia	1,282	1-10 (3)			S1, S2
Washington	1,997				
West Virginia	466	0-50 (0.5)			S1, S2, S3

* Other States not experiencing sufficient crop losses to report were: Arizona, Minnesota, Montana, North Dakota, South Dakota, Wisconsin and Wyoming.

a,b,c See Table 14 for explanation of footnotes.

Figure 16. Mummied fruit of plums destroyed by the brown rot fungus which can be seen as light colored spots on the surface. These mummies may hang on the tree for several weeks but most of them fall to the ground. The following spring they may produce a new crop of sexual spores such as those visible here. More often, however, the fungus passes through a sexual phase and produces a very small cup-shaped body on a slender stalk. The cup is lined with small sacs that discharge their spores during warm early spring.

TABLE 14. THE SEVERITY OF BROWN ROT OF PEACHES (Caused by *Monilinia [Sclerotinia] fructicola*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] 1000 bu.	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c,d]
Arizona		0-25 (0.3)			C2, S3
Arkansas	2,040	10-20 (10)			S1, S2, S3, Q2, D3, D2
Connecticut	130	X			S1, S2, Q2, D2
Delaware	406	1-30 (12)			S1, S2, S3, D3
Florida	87				
Georgia	5,033	2-35 (10)			S1, S2, S3, C2, D2, D3
Illinois	1,367	1-60 (5)			S1, S2, D3, N2, Q2, S3, D2
Indiana	334	4-50 (7)			S1, S2, S3
Iowa		8-40 (12)			D3, D2, S1, S2, Q2
Kansas	62		X		S1, S2, S3, D2, D3, Q2
Kentucky	653	X			S3, S1, S2, C2
Louisiana	298	20-50 (25)			S3, S1, S2
Maine			5		S3, S2
Maryland	505	6.2			S2, S3
Michigan	2,998	20,000 bu.			S1, S2, D2, D3, S3
Mississippi	875	20-50			S1, S2, C2
Missouri	575	20-90 (60)			S1, S2, Q2, N2, D3
Montana			Tr-100		P2, S3, D2, C2, O8, Q2, S1, S2
Nebraska		Variable			S2, C3, D2, Q2, S2
New Hampshire	15	1-5 (1)			S1, S2
New Mexico	150	5-30 (10)			S1, S2, S3, Z2, Q2, D2, D3, D4, D1
New York	1,532	X			S1, S2, S3, D3
North Carolina	1,971	X			S3, S2
Ohio	836	20-100 (60)			S1, S2, S3, D3, D2, Q2, N1
Oregon	505	X			O8, Q2, D2, D3, S1, S2, C2, C3, N1
Pennsylvania	1,809	6-25 (11.3)			S2, D3, Q2, S3, C2, S1
South Carolina	2,695	5			S1, S2, D2, D3
South Dakota		5-25 (15)			D2, P2
Tennessee	1,036	1-100 (40)			S2, C2, C3
Texas	1,628	15-40			S3, S2, D3
Virginia	1,282	5-100 (10)			S2, S3
Washington	1,997	.3-.5 (.4)			C2, D2, S2
West Virginia	466	0-100 (20)			S1, S2, S3, D3

* Other States not experiencing sufficient crop losses to report were: Minnesota, North Dakota, Wisconsin and Wyoming.

a Av. commercial production (crop) in 100 bu., 1936-1945

b Diseases are classified as: major when control measures must be used regularly (probably would destroy at least 25% of the crop if no control was applied); secondary when control must be applied whenever conditions justify it; and minor where the disease is a threat rarely reaching general destructive outbreaks (loss probably less than 5% on average). The losses given (range, with mean in parentheses) occur in spite of control measures, except for Missouri and Ohio where estimates of potential losses are given. An "X" marks the classification where the state authority did not have reliable records of estimated loss.

c See Table 1 of Article I for full names of coded chemicals.

d P2 is applied early in the spring as a ground Spray to old leaves bearing overwintering inoculum.

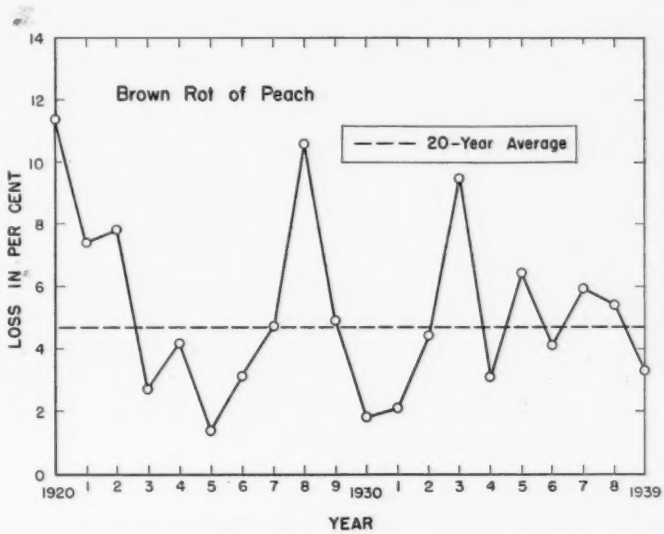

Figure 13. Annual loss of peach crop in the United States from brown rot as reported to the Plant Disease Survey by collaborators in the state agricultural experiment stations.

TABLE 16. THE SEVERITY OF LEAF CURL OF PEACHES (Caused by *Taphrina [Exoascus] deformans*) and the Chemical Control Measures Recommended for Application to Branches and Young Leaves by Plant Pathologists in Different States.*

State	Report From Crop[a] 1000 bu.	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c,d]
Arkansas	2,040	O			C2
Connecticut	130		X		S3, P2, C2, C3
Delaware	406	0-2 (1)			S1, S2, S3, C2
Florida	87				
Georgia	5,033		X		S1, S2, S3, C2, C1, C3
Illinois	1,367	Tr-50 (Tr)			C2, S3
Indiana	334	1-3 (1)			C2, S3
Iowa		1-3 (2)			S3, C2, Q2, D2
Kansas	62		X		C1, C2, C3, S1, S2, S3, D2, D3
Kentucky	653	X			S3, C2
Louisiana	298				
Maine		[2]			S3
Maryland	505	1.3			S3, C2, C3, P2
Michigan	2,398	5,000 bu.			C1, C2, C3, S1, S2, P2, S3
Missouri	575				
Montana			X		C2, S3
Nebraska		Variable			C2
New Hampshire	15	1-10 (Tr)			P2, S3
New Mexico	150		2-15 (2)		S1, S2, S3, C2, Q2, D2, D4, P2, O8, O9
New York	1,332	X			S3, C2, P2
North Carolina	1,971	X			C2, S3
Ohio	836	0-100 (35)			S2, C2, C3
Oregon	505	X			C2, D2, O8, S3, Q2, C3, P2
Pennsylvania	1,809		Tr-15 (2.4)		C2, S3, P2
South Carolina	2,695	X			S3, C2
Tennessee	1,036	1-15 (1)			C2, C3, S2
Texas	1,628		5-15		S3, D3
Virginia	1,282	1-10 (2)			S3, C1
Washington	1,997	.3-.5 (.4)			C2, D2, S3
West Virginia	466	0-75 (0.5)			C1, S1, S2, S3

* Other States not experiencing sufficient crop losses to report were: Arizona, Minnesota, Mississippi, North Dakota, South Dakota, Wisconsin and Wyoming.

a,b,c See Table 14 for explanation of footnotes.

d Sprays are applied dormant or delayed dormant.

TABLE 17. THE SEVERITY OF BACTERIAL SPOT OF PEACHES (Caused by *Xanthomonas pruni*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] 1000 bu.	Loss From Disease[b] Major %	Secondary %	Minor %	Treatments[c] Acceptable
Arizona		Tr-5 (1)			Z2, C2
Arkansas	2,040	0-50 (20)			Z2, C2
Connecticut	130			X	Z2, S3
Delaware	406	0-10 (5)			Z2
Florida	87				
Georgia	5,033	Tr-10 (2)			None effective
Illinois	1,367		Tr-25 (1)		
Indiana	334	1-3 (1)			Z2
Iowa		Tr-5 (2)			D2, D3, S1, S2, Q2
Kansas	62			X	
Kentucky	653				
Louisiana	298				
Maryland	505	1.3			Z2
Michigan	2,998				Z2
Missouri	575				
New Hampshire	15				
New Mexico	150				
New York	1,332				
North Carolina	1,971		X		
Ohio	836		0-15 (2)		None effective
Oregon	505				
Pennsylvania	1,809		Tr-2 (.2)		Z2
South Carolina	2,695	5			Z2, C2
Tennessee	1,036				
Texas	1,628		15-40		Z2, S2, D3
Virginia	1,282	1-10 (2)			S1, S2, C2, Z2
Washington	1,997				
West Virginia	466	0-75 (0.5)			Z2

* Other States not experiencing sufficient crop losses to report were: Maine, Minnesota, Mississippi, Montana, Nebraska, North Dakota, South Dakota, Wisconsin and Wyoming.

a,b,c See Table 14 for explanation of footnotes.

The disease is widespread but control is so effectively achieved that losses are reduced to a low level (Table 16) and may be attributed to carelessness. The loss in the United States has been estimated at about two and a half million dollars annually. Most of this is caused by defoliation early in the season. The fungus spores on the bark divide profusely so spores are available to infect young leaves as the leaf buds open. The leaves emerge with a red tinge, become curved and, as the leaf expands, show extreme distortion and crinkling. They take on a red cast on the upper surface and the fungus produces a compact silvery growth on the inside surface of the distorted area. The disease disappears during the summer because the fungus can attack only young leaves during cool weather.

Bacterial spot is a shot-hole fruit spot and stem canker type of disease that occurs throughout the eastern United States from New York and Michigan southward. Trees are so devitalized and the fruit injury so extensive that it becomes a major problem in many areas. The bacteria cause a translucent water-soaked spot on twigs and branches which dries down into cankers. The bacteria spread from these cankers which may even girdle the twigs, to young leaves, blossoms and fruit. The disease also occurs on plums, nectarines and apricot (Table 21).

The control is very difficult. Careful pruning and orchard sanitation are essential for pevention of the disease. A so-called zinc bordeaux spray, consisting of zinc sulfate and lime or zinc sulfate and lime added to sulfur in the early brown-rot sprays, is recommended in several states (Table 17). Very few investigators, however, are entirely satisfied with these control measures since they are only partially effective.

CHERRY DISEASES

Cherries have three major diseases. The *brown rot* is similar in all respects to the same disease on peach. Extensive blossom blight occurs in many cherry-producing areas and complete loss of a crop by fruit rot (Figure 14) is not uncommon. The sulfur

(Continued on Page 17)

TABLE 18. THE SEVERITY OF BROWN ROT OF CHERRIES (Caused by *Monilinia [Sclerotinia] fructicola*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] Tons	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c,d]
Arizona		0-25 (3)			C2, S3
Connecticut		X			S2, Q2, D2
Illinois		X			S3, C3, D2
Iowa		Tr-5 (3)			D2, D3, S2, C3, C2
Kentucky		X			S3, S2, C2, D2, D3, D4, D5
Maryland		6.2			S2, S3
Michigan	35,400	$20,000			S3, C3, D2, S2, S1
Minnesota		0-80 (5)			S1, S2, D2, N1, Q2
Missouri			0-50		C3, C2, D2, S2
Montana	435		Tr-100		P2, S3, D2, C2, O8, Q2, S2, S1
Nebraska		X			S1, C3, D2, Q2, S2
New Hampshire		5.0			D2, S1, S2
New York	19,215	X			S1, S3, D2, Q2, D1, S2, D3
Ohio	3,367	10-75 (25)			S1, S2, D2, C3, C2, N1
Oregon	20,180	X			S1, S2, D2, O8, O9, Q2, D3, N1
Pennsylvania	7,280	2.5-20 (7.3)			C2, C3, N1, S3, D2
Texas			5-20		S2, D3
Virginia		5-50 (10)			S2, C2, C3
Washington	27,360	.3-.7 (.5)			D2, S2
West Virginia		0-100 (10)			C3, D2, S2
Wisconsin	9,130	X			C2, C3, D2, N1

* Other States not experiencing sufficient crop losses to report were: Arkansas, Delaware, Florida, Georgia, Indiana, Kansas, Louisiana, Maine, Mississippi, New Mexico, North Carolina, North Dakota, South Carolina, South Dakota, Tennessee and Wyoming.

a,b,c See Table 14 for explanation of footnotes.

d P2 is applied early in the spring as a ground Spray to old leaves bearing overwintering inoculum.

MARKET NEWS

WEEKLY REVIEW

In view of the favorable, or perhaps it would be more properly labeled unfavorable, stock position, the majority of canners most naturally withdrew from the market upon President Truman's declaration of a National Emergency. Canned foods are as vital to a nation at War as guns and ammunition. In an Atomic War they even take precedence over guns and ammunition. From where this observer sits, not even the president has taken a realistic view (or at least he hasn't announced it) of the manpower requirements of the Armed Forces—and hence the amount of food—canned foods —needed to feed them.

Marketwise, then, there can be no question of a continuing firm demand from both Civilian and Government buyer. Ordinarily at this time of the year, it's the buyer who will have nothing to do with new business. This time it's the smart canner who will wait several weeks at least for the smoke haze in Washington to clear. Voluntary price control is purely and simply wishful thinking. It's entirely foreign to the American system of doing business. It not only won't work, but adjustments will have to be made when and after compulsary ceilings are established. For canned foods, those adjustments will be up. It's difficult to see anything fortunate in the emergency situation but if it had to come, it did come at a time when it hurts everybody least to have canned foods withdrawn from the Market.

NEW YORK MARKET

Many Canners Withdraw Pending Clarification Of Emergency Moves—Fear Of Disastrous Rollback Past—Tomatoes Nominal—Peas Withdrawn—Carrots Advance—Corn In Demand—Asparagus Cleaned Up—Cranberries Eased Slightly—Citrus Moves Up—California Fruits In Hands Of Large Packers —Look For Pick Up In Tuna—Pick Up In Sardine Buying—Salmon Firm—Better Feeling In Shrimp.

By "New York Stater"

New York, Dec. 22, 1950

THE SITUATION—Immediate effect of the President's proclamation of a state of emergency was withdrawal this week by many canners, pending clarification of the price control situation and further requirements of the Quartermaster Corps in making purchases for the indicated sharp increase in the number of men under arms during the first six months of 1951. While at present it is indicated that voluntary price control is in prospect for canned foods, this may be reinforced some time early in 1951 with a mandatory price ceiling structure, with a base period price yet to be determined. Marketwise, the chief development during the week was a further hike in canned citrus quotations.

THE OUTLOOK—While major food distributing organizations have pledged their cooperation in meeting government anti-inflation moves, the trade is waiting further information on the impact of the emergency proclamation upon food industry operations. Meanwhile, however, fears of a disastrous price rollback are pretty much a thing of the past, and distributors are making renewed efforts to strengthen their inventory position on wanted lines. At the moment, buying interest is evident on practically all foods with the exception of canned tuna, where a heavy supply in packer hands is still exercising a bearish influence upon the price structure.

TOMATOES—The market is a nominal affair, with 2s apparently valued in the neighborhood of $1.60-$1.65 and $8.00 and upwards on 10s, although this

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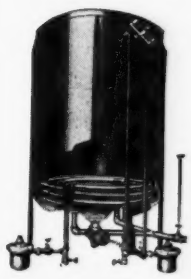

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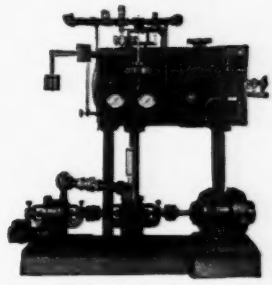

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size is so short and in such demand that this quotation will probably be outmoded by the time this report appears in print. Distributor tomato holdings are not large, and in some trade quarters the belief is expressed that the market may hit a new high before movement of the 1950 pack from canner hands is completed—always assuming, of course, that no arbitrary price ceilings are imposed on a retroactive basis.

PEAS — Canners generally are withdrawn from the market. Buyers are looking the market over carefully in an effort to bring to light additional offerings, particularly standards, while extra standards and fancy are also being sought.

CARROTS ADVANCE — New York State canners this week advanced their prices to a basis of $1.05 for No. 2 diced carrots, which is 10 cents over recent quotations. Distributors have been buying heavily, in view of the short supply position on other vegetables.

CORN—There has been a heavy demand for 8-ounce corn reported during the week, distributors expecting that this size will be dropped under emergency conditions. There has also been an active call for 303s and No. 2s in the full quality range, with offerings scant and prices firm.

ASPARAGUS—Coast reports indicate that canners have succeeded in just about cleaning up their pack of all-green, with small offerings of other grades reported at full list prices.

CRANBERRY SAUCE — Under the influence of heavy production, cranberry sauce has eased a little, with offerings from eastern canners reported this week on the basis of $1.20 for 16-ounce strained and $1.30 for whole, f.o.b. canneries.

CITRUS—With few exceptions, canners advanced their prices across the board this week, and it is indicated that the general market will move up before the close of the month. Offerings were reported during the period at $1.12½-$1.17½ for No. 2 unsweetened orange juice, with unsweetened blended juice at $1.00-$1.05, grapefruit juice at 92½ to 97½ cents, and fancy grapefruit segments at $1.70-$1.75, with choice at $1.45-$1.50, and broken at $1.40-$1.45, all f.o.b. canneries. Buying interest, particularly for supplies for shipment after January 1, was on the increase.

CALIFORNIA FRUITS—Advices from the Coast this week indicate that unsold stocks of fruits remaining in packers' hands are pretty well concentrated in the hands of the "big four" national brand canners. Independent packers' stocks are largely earmarked for shipment against business placed during the past several months. There were no revisions in prices reported during the week, but some buyers are inclined to anticipate a higher basis when canners offer "cleanup holdings" after the completion of year-end inventories.

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TUNA—The special promotion which canners are staging on whitemeat tuna means a lower net price to distributors during the progress of the drive, but the market otherwise is without change. Distributors are not covering ahead additionally to any extent, but the trade looks for a pick-up after the turn of the year as the trade begins to buy against Lenten season needs.

SARDINES — While Maine sardines can still be had at $5.50 basis, f.o.b. canneries, a number of packers withdrew during the week. There has been a substantial pick-up in buying. Meanwhile, California canners continue to quote at previous price levels, and have been getting a good volume of business.

SALMON—Government buying is eating into the small unsold stocks of salmon in first hands, and with the exception of chums, canners are expected to carry only limited stocks over the year-end into 1951. The market meanwhile remains firm and unchanged.

SHRIMP—It is reported that a number of the weaker sellers at the Gulf have succeeded in moving out their stocks at the recent cut in quotations, and while no price advances have materialized, the feeling is definitely better on this line this week.

CHAINS PLEDGE SUPPORT

The National Association of Food Chains, through A. D. Davis, chairman of the Board and John A. Logan, president, on December 15 sent a telegram to President Truman pledging full support in the national emergency and the maintenance of the orderly distribution of food "at the lowest cost possible."

The National Association of Food Chains is composed of over 200 companies operating more than 15,000 volume food stores in almost every community in the United States.

CHICAGO MARKET

Activity Belies The Season—Tomatoes Fantastic—Crop Difficulties In Spinach—Kraut And Citrus Turning Up With The Trend—West Coast Fruits Come To Life Again.

By "Midwest"

Chicago, Ill., Dec. 21, 1950

THE SITUATION—The tight fisted buying policy so prevalent up to last week has taken a definite turn and there is now plenty of activity in many lines of canned foods. Any worries the trade might have had about heavier than normal inventories have vanished into thin air as recent events make it quite plain merchandise now on hand will be used to good advantage between now and the new packs. Most of the soft spots have disappeared as a result of resumed buying and canners and buyers alike are convinced prices will be higher along with additional shortages in the months and possibly the few years ahead, depending, of course, primarily on influences outside the food field. In addition to higher can prices already announced for January 1st, it seems obvious labor will be seriously short this coming year resulting in higher canning and raw material costs. Much greater government requirements and tin restrictions are other important factors that have helped to create the sudden change on the part of all types of distributors. In addition to colder weather which normally stimulates increased consumption of canned foods, the threat of another world conflict has also had it's effect on the average housewife. The movement of all canned foods from retailer and jobber has stepped up considerably and eased a very tight financial and warehouse condition. December, which usually is a dull month insofar as canned foods are concerned, promises to be just the reverse this year.

TOMATOES—While demand remains quite active little business is being consummated simply because so little is offered and that which is, doesn't last very long. One lot of standard 2s out of Ohio sold here this week on the basis of $1.65 while another small lot of 2½s went for $2.50. A few hundred cases out of the Ozarks sold at $1.55 for 2s. A few thousand cases offered from Baltimore was quickly grabbed on the basis of $1.55 and $2.10 for 2s and 2½s. Anything offered in the morning is sold before the day is out which will give the reader some idea of the situation in Chicago. Prices grow more fantastic by the day. Juice is the only item in the tomato line still in reasonable supply and that is not expected to remain so very long. At present, fancy juice is available at $1.15 for twos and $2.50 for 46 oz. although large government bids in the offing are ex-

pected to push this market to higher levels. Any canner with tomatoes or tomato products still hidden in the warehouse will certainly have a Merry Christmas.

SPINACH — Crop difficulties in the Ozarks and the Tri-States have created a tight situation on this item along with many others. The trade are looking for spinach in all sizes, particularly tens, and not having much success. Little is offered from either section and practically nothing from California. One featured brand is presently offered from Texas on the basis of $1.50 for twos, $1.90 for 2½s and $5.85 for tens.

KRAUT—Sauerkraut was one of the items that tumbled into the doldrums during the recent buying lull although indications are now evident that the worm is about to turn. Distress selling, which dropped prices to as low as $1.05 for 2½s, is about ended and the market generally is firm at $1.15 for 2½s, 92½ cents for 2s, 82½ cents for 303s and $3.90 for tens. However, one important factor just this week advanced prices 10 cents on 2½s, 5 cents on 2s and 303s with tens up 30 cents, an indication of things to come.

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CITRUS—The feature of this week would be the strength shown in citrus since prices hit bottom and rebounded about a week ago. As usual, in a situation of this kind, buying has begun with a rush as the trade endeavor to under cover before prices start upward and, as usual, most don't quite make it. In any event, buying has been heavy and canners are firm at last week's quotations with a good possibility they will be shoved still higher before long. Can prices alone can do the trick and canners report considerable difficulty in obtaining sufficient cans to meet their needs. Furthermore, while the grapefruit market seems fairly steady, oranges are strong to advancing and canners are now faced with competition for the raw product from the concentrators just now beginning to get under way on a large scale.

WEST COAST FRUITS—The sudden buying interest has even affected Coast fruits which have been given the cold shoulder lately by all buyers. Now inquiries are cropping up in regards to Cling peaches, cocktail, cherries and even pears which had been completely ignored. However, independent canners in California are almost sold out and the trade will not have much success if buying develops to any degree. All fruit items are strong and with the government in the picture, will, no doubt, stay that way. Tens are in the shortest supply and the heaviest demand with little being offered. A few choice diced pears were sold here this week at $12.50 and some choice diced peaches at $9.75. It looks like buying will perk up considerably after the turn of the year if sellers have anything to offer.

The writer, at this time, would like to extend his wishes for a very happy New Year to all concerned.

CALIFORNIA MARKET

Market Active—Fruits Selling Above Lists —Tomato Speculation—Heavy Rains Hurt Spinach—Olives Moving At Rapid Rate— Heavy Sardine Catches Continue — Salmon Holdings Light.

By "Berkeley"

Berkeley, Calif., Dec. 21, 1950

THE SITUATION—The improvement in business that set in a couple of weeks ago continues without a letdown and December is proving a better month than had been generally expected. Buyers seem to have sensed a closely sold up condition on the part of some of the larger canners and a firming of prices and as a result have come onto the market again before the end of the year, instead of waiting for any possible softening in January. Shipping instructions have been rolling in of late and cannery warehouses are no longer bulging. Tuna

and sardines continue the weakest items in the list, with heavy packs and only a routine demand.

FRUITS — California canned fruits have firmed materially in recent weeks and list prices do not tell the real story. Some large firms, especially those with featured brands, have made advances only on items that were originally priced too close to actual costs. They are seeing to it, however, that sales are made only to reliable distributors, and not to speculators. Both peaches and pears are selling at higher than regular listings, and resales are getting quite common. Standard pears are fairly plentiful, but stocks of fancy and choice are difficult to locate in first hands.

TOMATOES—The tomato market is even more hectic than that on fruits. Here speculation is running riot and many purchases are made for the sole purpose of resale. Tomato paste has almost doubled in price in less than six months, with some sales during the week at $22.00 for No. 10s. Almost every item in the tomato or tomato products field is selling above the lists of a month ago. One canner came out early in the season with a price of $10.50 on No. 10 catsup, later raising this to $11.00. Costs proved higher than expected and an advance has been made to $12.75. Others are now selling this product at $14.00.

SPINACH — The heavy rains have boosted the cost of growing and harvesting spinach and canners have advanced prices on winter pack, with some out of the market for the time being. Recently revised lists have upped No. 2s to $1.42½, No. 2½s to $1.75 and No. 10s to $5.50. Some good spinach acreage has been flooded and doubt is expressed that the land can be prepared for even a spring crop.

OLIVES—Ripe olives are moving out at a rapid rate to the distributing trade, retailers having had a splendid holiday business, according to reports received by the Olive Advisory Board. Considerable of the added business is coming from sections of the country other than the Pacific Coast which in the past has accounted for much more than one-half of the national consumption. There have been no heavy frosts as yet in the olive growing districts of California which means that more of the crop than usual may go to canners. Prices are firm at lists brought out at the opening of the season.

SARDINES — The sardine pack continues to mount, with heavy catches being brought into San Pedro. Comparatively small quantities are being landed at San Francisco or Monterey. Landings in California for the season to December 13 amounted to 292,251 tons, compared to 228,846 tons to a corresponding date last year. The canned pack to December 3 was 3,833,662 cases, against 2,918,002 a year earlier. Selling continues at a rather slow pace with prices off slightly from published lists.

SALMON — Canners marvel at their ability to sell their packs of salmon at the prices now prevailing but advise that unsold holdings are now very light. Alaska reds are practically out of first hands and pinks are getting in light supply. Prices vary somewhat, according to seller, but No. 1 tall Alaska reds have sold during the week at $30.00, with halves at $18.50, pinks at $24.00 and Chums at $20.00. Puget Sound sockeye halves are moving at $21.00, with little of the pack in first hands.

GULF STATES MARKET

Poor Shrimp Movement May Be Blessing In Disguise—Shrimp Receipts Off

By "Bayou"

Mobile, Ala., Dec. 21, 1950

SHRIMP—If the price of $3.00 per dozen for 5-ounce small canned shrimp; $3.40 for medium; $3.75 for large; and $4.20 for jumbo, f.o.b. cannery did not move a large volume of business, it may prove a blessing in disguise to the packers because with the anticipated shortage of cans and the increase price of same, a shortage of the future pack is naturally to be expected, hence it is reasonable to assumed that an increase in the price of canned shrimp will take place rather than a further drop.

A reduction in price of 75 cents to $1.00 per dozen in this commodity is quite an item, especially in the face of increasing cost of the pack, therefore it looks like the only way the rabbit can jump now is in the direction of higher prices.

As reported by all Market News offices last week, total holdings of frozen shrimp increased 566,000 pounds, and were approximately 1,294,000 more than 4 weeks ago. Total holdings were approximately 1,165,000 more than one year ago.

During the month of October 1950, Mexico exported to the United States 4,028,000 of fresh and frozen shrimp. In the same month last year 2,945,368 pounds were imported. The total imports of shrimp from Mexico from January through October were 25,561,066 pounds or 6,025,737 pounds more than for the same months in 1949.

In addition to the imports from Mexico in October, Panama shipped 24,794 pounds, the Canal Zone 30,726 pounds, and Greenland 16,330 pounds, hence it may be seen that the United States is importing large quantities of shrimp, which keeps its freezers well stocked with the crustaceans.

OYSTERS—Production of oysters is limited to what the raw market uses, as the canneries have not started to pack oysters.

The price of canned oysters from the more responsible packers is on the basis of $3.80 a dozen. However, some small field brokers operating in the name of canning companies selling slightly under these prices.

III. CHEMICALS USED ON STONE FRUITS

(Continued from Page 12)

schedule of sprays is recommended (Table 18) with rather heavy substitution of copper or organic fungicides to help control leaf spot.

The *leaf spot* frequently described as fungus shot-hole or yellow leaf, is a very serious disease in the major cherry-producing areas of the Midwest and Great Lakes region (Table 19). The fungus overwinters on infected leaves underneath the trees. Sexually-produced spores are discharged from the leaves during rainstorms about the time the young leaves emerge. They infect the leaves where they produce a small purplish-red spot. About ten days later a small, raised, light colored blister appears usually on the lower side. This ruptures to release masses of slender spores which infect surrounding leaves. This cycle repeats itself rapidly so that practically all of the leaves may become infected by the time the fruit begins to color. The infected area dries up, becomes brown and drops out to give a shot-hole effect. The leaves eventually become yellow and drop from the tree (Figure 15).

Orchardists usually control the disease fairly well up to harvest while spraying for brown rot but sulfur materials are only partially effective and subsequent failure to spray in the post-harvest season permits the disease to denude the trees. The trees fail to store food so that twigs, branches and even whole trees winter-kill readily and surviving branches have a very poor set of fruit buds for the next year's crop. A couple of well placed sprays of copper or organic materials ten days before harvest and a week following harvest will give good protection from the fungus. Although copper and sulfur materials are still depended upon in moist localities (Table 19), glyoxalidine, dichloronaphthoquinone and dithiocarbamates are finding increasing favor in many areas.

Powdery mildew (Table 21) is very severe in some midwestern states where it has been effectively controlled by late season applications of copper sulfur or organic fungicides.

The usual spray program for cherries consists of four or five applications. These are timed at petal fall, shuck fall, pre-harvest and post-harvest. In those localities where brown rot blossom blight is severe, a pre-blossom spray may be necessary and if powdery mildew is a major problem two extra post-harvest sprays may be necessary.

TABLE 19. THE SEVERITY OF LEAF SPOT OF CHERRIES (Caused by *Coccomyces hiemalis*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] Tons	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c,d]
Connecticut		X			N1, D2
Illinois		Tr-50 (2)			C2, D2, N1, N2, P2
Iowa		5-20 (8)			C3, D2, C2, Q2, N1
Kansas		X			C2, C3, D2
Kentucky		X			S3, C2 C3, D2, D3, D4, D5
Maine			2.0		S2
Maryland		1.0			S3, C2, C3, N1
Michigan	35,400	$50,000			C3, C2, S3, D2, N1, D4
Minnesota		X			S1, S2, C2, C3, D2, N1, Q2
Missouri		50-90 (70)			C3, C2, D2, S2, N1
Montana	435				
Nebraska		X			S1, C3, D2, Q2, S2
New Mexico			0-10 (1)		C2, S1, S2, Q2, D2, D4, O8, O9, P2
New York	19,215	X			S3, S2, D2, N1 (C3 sour cherries)
North Carolina		X			C2, C3
Ohio	3,567	10-40 (25)			C3, C2, D2, N1, Q2
Oregon	20,489	X			D2, S3, S2, S1, Q2, C2, C3, N1
Pennsylvania	7,280	6-17.5 (9.3)			C2, C3, N1, S3, D2
Virginia		5-50 (10)			S2, C2, C3, N1, D2
Washington	27,360	.3-.8 (.5)			D2, S3
West Virginia		10-100 (15)			C2, S2, C3, D2
Wisconsin	9,130	X			C2, C3, D2, N1
Wyoming			X		C2, S3

* Other States not experiencing sufficient crop losses to report were: Arizona, Arkansas, Delaware, Florida, Georgia, Indiana, Louisiana, Mississippi, New Hampshire, North Dakota, South Carolina, South Dakota, Tennessee and Texas.

a,b,c See Table 14 for explanation of footnotes.

d P2 is applied early in the spring as a ground Spray to old leaves bearing overwintering inoculum.

TABLE 20. THE SEVERITY OF BROWN ROT OF PLUMS (Caused by *Monilinia [Sclerotinia] fructicola [laxa]*) and the Chemical Control Measures Recommended for Application to Foliage and Fruit by Plant Pathologists in Different States.*

State	Report From Crop[a] Tons	Loss From Disease[b] Major %	Secondary %	Minor %	Acceptable Treatments[c,d]
Arizona		0-25 (3)			C2, S3
Connecticut		X			S2, Q2, D2
Illinois		5-95 (20)			C2, S2, S3, D3, Q2, D2
Indiana		X			S2, S3
Iowa		5-50 (15)			D3, D2, Q2, S1, S2, S3
Kansas			X		S2, S3, Q2
Kentucky		X			S3, S2, C2, D2, D3, D4, D5
Louisiana		20-50 (25)			S3, S1, S2
Maine			5.0		S3, S2
Maryland		6.2			S2, S3
Michigan	4,080				S1, S2, S3, D2, D3
Minnesota		0-80 (5)			S1, S2, D2, N1, Q2
Missouri		20-80 (60)			D2, C3, C2, S2
Montana			Tr-100		P2, S3, D2, C2, O8, Q2, S2, S1
Nebraska		X			S1, C3, D2, Q2, S2
New Hampshire		0-5 (Tr)			S1, S2
New York		X			S1, S3, D2, S2, C2
North Carolina		X			S2, S1
Ohio		35-100 (75)			S1, S2, S3, D2, D3, Q2, C2, C3, N1
Oregon	87,980	Variable			S1, S2
Pennsylvania		10-20 (12)			S2, C2, C3
South Dakota		5-25 (15)			D2, P2
Texas		5-15			S3, S2
Washington	24,140	.5-1.5 (1.0)			D2, S2
West Virginia		0-100 (20)			S1, S2, C3, D2
Wisconsin		X			S2, C2, D2, C3

* Other States not experiencing sufficient crop losses to report were: Arkansas, Delaware, Florida, Georgia, Mississippi, New Mexico, North Dakota, South Carolina, Tennessee, Virginia and Wyoming.

a,b,c See Table 14 for explanation of footnotes.

d P2 is applied early in the spring as a ground Spray to old leaves bearing overwintering inoculum.

Figure 14. Brown rot of Montmorency cherry. Fruits in the early stages of rot and mummied condition are near two normal fruits. If warm humid conditions prevail as the fruit begins to ripen the spores from infected members are almost certain to spread to the remaining healthy fruit. About 85 per cent of the fruit in the orchard where this picture was taken were infected so the crop was not worth harvesting. Three or four well timed sprays could have prevented practically all of the loss.

PLUM AND PRUNE DISEASES

The major disease of plums is *brown rot* (Figure 16) which is extremely severe on some varieties. It has driven some favorite varieties from the market. Appreciably lighter spray schedules may be employed by choosing some of the more tolerant sorts. The extent of the damage done to this crop and the chemicals recommended for its control by plant pathologists in different states are summarized in Table 20.

Bacterial spot is very important in some localities. *Black knot* (Table 21), a fungus disease that causes large black overgrowths on the twigs and branches which are eventually killed, is a major concern in many areas. Spraying is only partially effective but trees that are properly pruned and sprayed rarely suffer severe damage.

The usual spray program for plums consists of four applications timed almost exclusively for brown rot control. They are made at petal fall (in some areas), first cover (shuck fall), second cover (2 weeks later), third cover (three weeks before harvest). One to three additional cover sprays are used in some states in order to control brown rot and curculio.

It should be noted that no data are included on California, the major plum and prune-producing state, in these compilations. Almost 14,000,000 of the 22,715,927 trees recorded in the 1945 U. S. Census of Agriculture were to be found in 24,000 California orchards. Fortunately the disease problems are not so severe as in the eastern areas.

SECONDARY DISEASES OF STONE FRUITS

There are several other diseases of peach, plum and cherry that are of major concern in some states. The nectarine and apricot are also subject to several diseases, as shown in Table 21. Most of these diseases are caused by the fungi discussed on other stone fruits and similar control measures are employed.

Figure 15. Cherry leaf spot is also called by such names as fungus shot-hole and yellow leaf. The fungus overwinters on old leaves and produces sexual spores early in the spring. These are usually discharged when young leaves are fully emerged. Infection starts as a small purplish spot. The under surface of the leaf ruptures to release a mass of white summer spores from a slightly raised speck. The spot then dries down and drops out to give a shot-hole appearance as shown on the lower left leaf. (Photograph supplied by J. M. Hamilton of the New York Agricultural Experiment Station.)

TABLE 21. LIST OF SECONDARY DISEASES OF PEACH, PRUNE, CHERRY, APRICOT, AND NECTARINE in the United States and Chemicals Recommended for Application to Foliage and Fruit for their Control.

Disease Reported Upon		States Classifying Disease		Acceptable
Common Name	Causal Agent	Major Secondary Minor		Chemicals c,d
PEACH:				
Powdery mildew	Sphaerotheca pannosa		Conn.	S2, S3
			Tex.	S3, S2
Powdery mildew	Podosphaera oxyacanthae	Ia.		D2, S2, Q2
			Ga.	S2, C2
		Ore.		S1, S2
			Pa.	S2, S1
		Wash.		S2
Rust	Tranzschelia punctata		Ga.	(D2, D3, D4, D5)
			Tex.	S2
Canker	Valsa cincta	Mich.		M1
Canker	Valsa leucostoma		Ohio	M1, O8, O9, P2
Blight	Coryneum beijerinckii		Ohio	C2, C3
		Ore.		Q2, C2, D3
		Wash.		C2, D2, S2
Bitter rot	Glomerella cingulata		Tex.	S3, S2
Gray mold	Botrytis cinerea		Pa.	D3, S2
Frosty mildew	Cercosporella persicae		Tex.	S3
APRICOT:				
Blight	Xanthomonas pruni		Tex.	S3, Z2, D3
Blight	Coryneum beijerinckii	Ore.		C2, C3, Q2, D3
		Wash.		C2, D2, S2
		Tex.		S3, S2, D3, Q2
Brown rot	Monilinia fructicola	Wash.		D2, S3
Scab	Cladosporium carpophilum		Tex.	S3, S2, D3
PLUM:				
Fire blight	Erwinia amylovora		Tex.	C2, Z3
Powdery mildew	Podosphaera oxyacanthae		Conn.	S2, S3
Bacterial spot	Xanthomonas pruni		Conn.	Z2, S3
		Ia.		D2, D3, S2, Q2, S3
			Pa.	S2, C3
			Tex.	C2
		W.Va.		Z2
Leaf curl	Taphrina mirabilis		Conn.	S3, P2, C2, C3
Leaf curl	Taphrina deformans	S.D.		D2, D3, S3
Leaf spot	Coccomyces prunophorae		Conn.	D2, S2, N1
		Kans.		C2, C3, D2
		Mich.		C3, D2
		N.H.		S2, C2, C3
		N.Y.		S2, C2, D2
Black knot	Dibotryon (Plowrightia) morbosum	Ill.		S3
		Ind.		C2
		Md.		C2, C3
		Mich.		S3, C2
		N.M.		S1, S2, S3, C2, Q2, D2, D4, P2
		N.Y.		S3, C2
			Ohio	C2, C3
		Pa.		C2
			Tex.	S3, S2
			W.Va.	S2
			Wisc.	C2, S3
Pocket	Taphrina (Esoascus) pruni	Ia.		D3, D2, S3, S2
			Me.	S3
		N.M.		S1, S2, S3, C2, Q2, D2, P2
			N.D.	C2, S3
			Tex.	S3, S2
Scab	Cladosporium carpophilum		Pa.	S2, C3
Blotch	Phyllosticta congesta		Tex.	S3, S2
Rust	Tranzschelia punctata		Tex.	S3, S2
CHERRY:				
Gummosis	Pseudomonas cerasi	Ariz.		M1 (wound)
Powdery mildew	Podosphaera oxyacanthae	Ia.		C3, C2, S2, S3, D2
			Kan.	C2, C3, S2
		Mich.		C2, C3, S2
			Pa.	S3, S2, C3
Black knot	Dibotryon morbosum		N.M.	N4, C2, S1, S2, Q2, D2, D4, O8, P2
			Pa.	C2, C3
			Va.	S3
			W.Va.	S2
Bitter rot	Glomerella cingulata		Pa.	D3, Q2, C3
			W.Va.	D2
Fruit rot	Alternaria spp.		Pa.	D3, C3
Fruit spot	Cercospora circumscissa		Pa.	D2
			Tex.	D2
NECTARINE:				
Scab	Cladosporium carpophilum		Tex.	S3, S2
Brown rot	Sclerotinia fructicola		Tex.	S3, S2, D3
Leaf curl	Exoascus deformans		Tex.	S3, S2
Leaf spot	Xanthomonas pruni		Tex.	C3

c See Table 1 of Article I for full names of coded chemicals.

d M1 used as a wound treatment of bark; P2 and all leaf curl sprays are applied while trees are dormant.

THE CANNING TRADE

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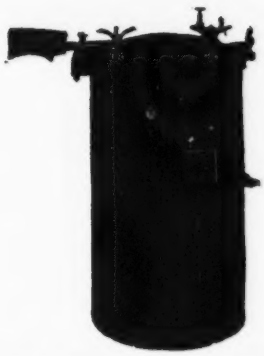

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WATER FOR CANNING

No. 11

Conserving Canning Water

(For copies of this complete series, please write to Department A, Cont nental Can Company, 100 E. 42nd St., New York 17.)

IN SOME PARTS of our land, particularly in the West, water supplies are critically low, and in many other areas dwindling supplies pose threats of future shortages. The conservation of water is fast becoming a necessity for the continued operation of canneries in such locations.

Water saving procedures are no innovation in the industry, yet have not commonly been practiced in very many plants. Necessity has forced development of methods, however, and there are several basic procedures for saving water which may be applied safely in the average cannery. These relate to: the elimination of waste through efficient equipment design and operation, the use of mechanical conveying systems instead of water flumes, and the recovery, treatment and re-use of water in certain cannery unit operations.

The saving of water that may be accomplished by the elimination of water flumes and the use of mechanical conveying systems is obvious. Where necessary or desirable for reasons of efficiency and cost to use water fluming for raw materials, water consumption may be reduced by the recovery and re-use of a portion of the flumic water. This procedure and its limitations are described in subsequent paragraphs.

Saving water through improved equipment design is largely a theoretical consideration, but does offer some practical possibilities. Selection of equipment in part for its water saving attributes, and care in avoiding wasteful operation can effect substantial water savings. Hoses and other water lines can be equipped with automatic shut-off valves. High pressure sprays use less water in clean-up than low pressure lines. Excessive and continuous overflow from soaking or washing tanks may be avoided. Continuous water flow in flumes, washing reels, sprays and similar equipment when not handling product creates wasteful water use.

Recovery of water from various cannery unit operations, treatment to render it safe, and subsequent re-use in the cannery offers a means of effecting considerable water economy. Indiscriminate re-use of water, however, without consideration as to its effects upon product quality, sanitation, or spoilage of the canned food, could lead to disastrous loss. In many unit operations only fresh potable water may be used. Water from some operations cannot be recovered for re-use in any part of the cannery. The use of recovered water is limited within the plant, both as to source and intended re-use. In addition, there are several precautionary measures that must be taken for any water recovery and re-use.

All water recovered and intended for re-use in either the same equipment or in other operations should be chlorinated. This is particularly important for water intended for re-use in can cooling equipment, to prevent excessive bacterial build-up and resulting spoilage of processed cans. It is also important for water re-used elsewhere, to prevent equipment contamination and for observance of general good sanitary practices. Careful control is necessary to insure maintenance of adequate chlorine residuals. All recovered water must be handled in separate systems of piping and pumping, clearly identified by color and signs, and *extreme care must be exercised to avoid any connection with the potable water supply.*

Removal of as much organic matter as possible by screening of water at recovery is advisable. Furthermore, fresh unused replacement water must be added to treated recovered water in any equipment to which it is added. The volume of replacement water used must be adequate to prevent the accumulation of undue amounts of organic material.

Water which has been treated with any kind of corrosion inhibitor may not be re-used for any purpose except cooling cans. For canning products which are discolored by iron, recovered water presents the potential hazard of build-up of dissolved iron. Excessively high iron content may also play a contributing part in "black beet" spoilage.

There are several unit operations commonly used in canning almost all types of products to which water saving measures may be adapted. The extent to which water economy may be practiced in these operations is limited by the necessities of quality, sanitation and spoilage prevention.

Fluming of various materials often consumes large quantities of water. Waste material may be flumed in any previously used water. Raw products may be conveyed in flumes using water recovered from spray can coolers, or from retorts used for batch cooling of processed cans, provided the water is cool and free of organic matter. Products in the process of preparation, which have been peeled, cut, washed, blanched, or subjected to any preparation process, should be conveyed in *fresh water only.* These provisions apply also to water used in hydraulic elevators. In general, water recovered from flumes and hydraulic elevators may not be re-used elsewhere, except that a portion may be used again in the same equipment.

Washing of products presents possibilities for water economy. Water recovered from spray or retort can cooling may be used in preliminary raw product washers. Only fresh water should be used for final washing of products which have undergone preparation processes. Where successive washers are employed for raw products, water from the second may be recovered for re-use in the first washer. For purposes other than this, wash water should not be re-used. Low temperature is a requisite for water intended for use in washing, to prevent bacterial build-up and consequent product contamination. Wash water from products such as tomatoes which are subject to mold development in the raw state, or those likely to bear insects, such as spinach, probably cannot be re-used for first washing because of the extreme danger of contaminating products subsequently handled in the same equipment.

Blanching should be done only in fresh water. Although pipe blanching equipment recirculates hot blanching water, a copious supply of fresh potable water is required for continued operation, and the overflow water cannot be used for any other plant operation except waste fluming.

Soaking and Holding require fresh water only. Spent water from such operations should not be used in any other plant process except in waste conveying.

Cooling of cans after processing requires water of low microbial content, but chlorination makes possible the safe re-use of cooling water under certain circumstances. For cooling canals only fresh potable water should be used in the initial charge. Water from the hot end of the canal may be withdrawn for cooling and re-use in the canal, provided it is carefully and adequately chlorinated, and the cooling equipment and canal are maintained in clean condition. It is also necessary to provide a continuous supply of fresh potable water to the system. Water from cooling canals should not be re-used elsewhere in the plant except for waste fluming. The recovery and re-use of water from continuous cooling equipment in which cans are partially immersed in water is governed by the same limitations that apply to cooling canal water. Water recovered from spray coolers may be re-used in the same equipment, or may be used for other unit operations as described above. Chlorination before re-use is recommended. Cans to be cooled in equipment from which water is recovered for re-use should be washed thoroughly immediately after closing, in order to remove adhering organic material.

Cleaning up a plant and equipment may be performed in part with recovered water from spray and batch retort can cooling. Such water may be used for preliminary washing if it is adequately chlorinated. Only fresh water should be used for the final washing.

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